Public Health
Seattle & King County
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Guidelines for Winter Water Table Review (WWTR) Monitoring and Site Evaluation

These guidelines are intended to provide a standardized process by which the design community and the Health Department (HD) can better determine site suitability for OSS. This guideline establishes specific requirements and definitions to assure that more complete and meaningful data can be gathered, with the intent that proper assessment and evaluation will take place. The HD will provide opportunities for industry feedback in the spring following the WWTR season.

Requirements:

- Per code (K.C.B.O.H. Title 13), January 1st is the last day WWTR applications may be submitted in order that a complete and adequate review can be made. It is recommended that WWTR applications be submitted to the HD no later than **Nov. 1st** in order to record data in early wet season years. Should applications not be submitted in time to gather this data it may be lost for that wet season. It is therefore incumbent on the designer to inform the applicant of the possible consequences of missing this data-gathering period.
- To provide the best service possible WWTR applications should not be all submitted to the HD on the last day possible in order to meet the deadline.

Site Application Designs and WWTR's

- A complete site design application may be submitted for a combined WWTR and design review. Accompanying the application must be a site design application fee and WWTR application to include the requirements, which follow.

Application Held for WWTR by the HD

- If determined to be questionable for soil depth by the reviewing Sanitarian, site design applications that are submitted (without a request for WWTR) on or after October 1, will be held for WWTR. Site design applications which are submitted or reviewed prior to October, and for which a WWTR is warranted, will be disapproved. This may necessitate resubmission for WWTR during the required WWT time period. When an application is held for WWTR the designer of record will be notified in writing regarding the status of the application. Following designer notification, a copy of the notification will be sent to the property owner. Consultations with the reviewing Sanitarian can help determine if the designer/engineer should also monitor the site.

All requests for WWTR require a WWTR Application

The WWTR Application shall include:

- **An initial fee of $666.00;**
- **An additional fee when the WWTR is submitted in connection with a site design application; The additional fee shall comply with the program memorandum dated November 1, 2005.**

- **A cover letter** detailing any history or special circumstances the HD needs to be advised of;
- **A completed application form (see attached);**
- A **detailed vicinity map** showing identifiable landmarks;
- The lot to be monitored is to be **clearly flagged with identification** of the designer and applicant at the access point of the lot.
- **Soil Log data** for the area being monitored;
- **An overall dimensioned plot plan** detailing the location and specific identification of each monitoring port or soil log hole to be monitored; For each application, no more than 6 monitoring stations/holes will be spot checked for data collection by the HD. These stations must be clearly identified on the plot plan as well as at the site. You may choose to install additional monitoring stations on the site, but the HD will not be committed to recording data from these stations. Identify the access route to the sample ports on the plot plan as well as at the site. Access to the sampling site must be maintained. All relevant surface and known seasonal water features are to be delineated on the plot plan.
- **A Winter Water Table Monitoring Plan (WWTMP)**

All applications are to be submitted with a WWTMP. The WWTMP shall include the following:

- Identification of who will be doing the monitoring
- Length of time the monitoring period will cover
- Description of the method used for recording data for each type of monitoring station
- The frequency or level of monitoring.
- Source of precipitation data to be used
- Identification of monitoring stations type(s) used (monitoring ports or soil log holes)

Note:

If monitoring ports are used, a hand dug soil log hole is to be placed near the sampling ports for calibration and clearly labeled as such.
The designer is expected to substantiate the value of all data gathered and be <u>accountable for its accuracy</u>. In addition, the designer is responsible for compiling all data and other information and submitting it to the HD in a clear and concise manner.

Health Department Initial Evaluation

- Before a WWTR Application can be accepted for processing, it will be initially screened by the Sanitarian of the Day (SOD). Applications determined to be incomplete will be <u>returned to the designer</u> without HD field review.
- Within 14 working days of acceptance of a WWTR Application, the HD will make a site visit to determine if the application meets all requirements and standards for gathering water table data. If found unsatisfactory, the application will be rejected and the designer/engineer will be notified. It is the designer's responsibility to insure that all necessary application requirements are met. The HD recommends a that designers'/engineers' utilize a WWTR application checklist as tool for meeting the requirements.(checklist attached)
- A corrected application must include a revised version of the application and a $157.27 resubmission fee.
- The application can be resubmitted once corrections have been made.
  Note: If the Designer delays the resubmission past the January 1st deadline there may be insufficient time remaining to do an adequate WWTR.

Categories of Lots Requiring WWTR:

1. Lots suspected of high winter water tables due to specific soil morphology or soil indicators, such as soil mottles, soil chroma, and depth to restrictive layer, wetland vegetation or history of the surrounding area.
2. Lots with previously identified high winter water tables, which need additional information to make a determination of suitability.
3. Lots where unacceptable soil depth has been demonstrated and some method or methods has/have been incorporated to divert subsurface flows in an effort to lower the water table, such as an interceptor trench.

Reasons for WWTR:

1. To determine if a site meets the minimum standard for use of an OSS (18 inches or 12 inches for 5 acre parcels per Title 13.28.020,S)
2. To determine the type of OSS system to be used based on soil depth to water table (typically the difference between using a PD system Vs. a SF or Mound)
3. Drains installed for the purpose of affecting vertical separation (Title 13.28.030)

Water Table Monitoring Stations

All Monitoring Ports Are:

- To follow the standard set in the previous Pilot Program Memorandum of December. 30, 1996.
- Expected to have crest gauges or some means of recording the peak water tables.
- To have piping of a light color so that the water level can be determined (black piping is not acceptable).
- To have port caps that is easily removable without disturbing the port.
- To conform to the criteria established in the *Field Guide for Evaluating Water Tables on Septic Systems.*

If a low area exists within the site review area a monitor port or soil log is to be included at this spot. When including a drainfield design a monitoring port or soil log is to be placed in the area of the lowest proposed lateral.

Soil Logs- Used for Measuring Water Tables Are:

- **Not** acceptable if they penetrate beyond a restrictive layer
- To have a standardized point of reference to measure from (see illustration provided); All sloping sites are to be measured from the down hill side.
- To provide adequate safety measures and flagging (See Title 13, 13.28.050)
- To be constructed using sampling pits that conform to the criteria established in the Field Guide for Evaluating Water Tables on Septic Systems.

Presentation of Data by Designer

- Daily rainfall data is to be plotted on a graph through each month monitored
- Indicate on the above plotted graph, the date water table data was gathered
- At the appropriate time determined by the HD, the designer will be requested to supply his/her data report. All winter water table related data is to be submitted to the HD within 14

working days of the specified notification date. Data not provided within the prescribed time frame cannot be used in determining the suitability of the lot under review.

NOTE: Field data recording points should be **taken when high winter water tables are present**. Data recording points taken when no water tables are present in the surrounding area are of little value in determining site suitability.

Factors in Determining High Winter Water Table conditions

- From November through December sufficient water from rainfall must accumulate to establish a WWT and enough subsequent/background rainfall to maintain this condition. Extended periods of time without rain during the WWT season often means that substantial repeated rainfall is needed to bring back the WWT condition.
- Significant storm events (2-3 days in duration) following the initial development of a WWT may develop a High WWT condition.
- If storms don't follow in close frequency, after development of a WWT, a High WWT condition may not develop.
- Return probabilities/storm frequencies (i.e. 2,4,8,10,20,30 year storms). Each higher level of storm raises the possibility that a High WWT event will occur. However in **some** instances, storms of rare frequency triggering the largest rainfalls may also cause abnormally high WWT levels.

- To put readings into perspective the HD needs sufficient data points (i.e. the highest level of monitoring), especially to put rarer occurring levels/events into perspective. If the lot in question is marginal, a higher level of monitoring is automatically indicated. If the lot in question demonstrates a water table spike event (see below) the higher level of monitoring should be used to put this event into perspective.
- **Spikes** -Following the heaviest rains of a storm, the water table may spike to abnormally high levels. A true spiking event would be expected to return to a high WWT condition within 24-48 hours following the storm event). Therefore, it is important to make a 24 hour follow-up field visit to record the water table level.
- Spikes to 16-17 inches of the surface on a 30-year storm Vs spikes to 6-10 inches following a 3,5 or 10 year storm can be interpreted differently in regards to the suitability of a site.
- We advise that designers/engineers study the definition and concept of "storm return period". This information is contained in a number of sources including the information handout entitled "Water Table and Hydrology Evaluation for On-Site Sewage System Design", November 1996

By monitoring the storm events (size and frequency) in conjunction with field observations of water tables within known areas, the HD determines when High WWT conditions exist. This information will be posted on a board at the Eastgate District field office health department (Eastgate) field office reception area. Designers/Engineers may also contact the SOD for a status report (206) 296-4932.

Levels or Degree of Monitoring

1. **Monitoring Level-1 (ML-1) High Level Monitoring:** 12-20+ data recording points (as necessary)

2. **Monitoring Level-2 (ML-2) Medium Level Monitoring:** - 5-12 data recording points

3. **Monitoring Level-3 (ML-3) Low Level Monitoring: -** 3-5 data recording points

Obtaining Rainfall Data
Previous day rainfall information for our region may be obtained from printed media (e.g. the Seattle Times)

Daily and or monthly rainfall summaries may be obtained via the internet at www.srh.noaa.gov/

Weather forecasts from these sources can be of valuable in advanced scheduling of field data collection points/dates.

Monitoring Duration

Monitoring can be terminated when:

- An observation is made that clearly indicates a site is not suitable (i.e. water to the surface or within 10 inches of the surface) at any time.
- Clear indication that a site is acceptable for the proposed system type (when a design has been included) following at least two High WWT conditions (18 inches or more clearly indicated).

Continued Monitoring Throughout the WWT season, when:

- Sites are marginal and continue to receive marginal WWT readings
- Sites utilizing mitigation measures to lower water tables
- Spike event occurs which needs to be put into perspective. Enough monitoring data is to be recorded to establish that the one spike reading is truly a rare event. It is the Designers responsibility to provide this information to the HD.

Analysis and Evaluation

- The HD will notify Designer regarding when to submit data for final analysis
- During the final phase the HD will verify observed vertical separation limits and appropriate levels of treatment expected upon submission of a complete design.

In lieu of an approval or disapproval, the HD will issue an **analysis letter** indicating whether or not the site is considered acceptable for submission of an OSS design and if acceptable, the minimum level of treatment necessary.